

6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1 and 30

[GN Docket No. 14-177; FCC 18-180]

Use of Spectrum Bands above 24 GHz for Mobile Radio Services

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document, the Federal Communications Commission (Commission or FCC) adopts rules for specific millimeter wave bands above 24 GHz in the Fourth Report and Order. This Order establishes an incentive auction that promotes the flexible-use wireless service rules that the Commission has adopted for services in the Upper 37 GHz (37.6 - 38.6 GHz), 39 GHz (38.6 - 40 GHz), and 47 GHz (47.2 - 48.2 GHz) bands by making spectrum available for fifth-generation (5G) wireless, Internet of Things, and other advanced services in these bands.

DATES: Effective **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

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SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Fourth Report and Order (Fourth R&O), GN Docket No. 14-177, FCC 18-180, adopted on December 12, 2018, and

released on December 12, 2018. The complete text of this document is available for public inspection and copying from 8 a.m. to 4:30 p.m. Eastern Time (ET) Monday through Thursday or from 8 a.m. to 11:30 a.m. ET on Fridays in the FCC Reference Information Center, 445 12th Street S.W., Room CY-A257, Washington, DC 20554. The complete text is available on the Commission's Web site at <http://wireless.fcc.gov>, or by using the search function on the ECFS Web page at <http://www.fcc.gov/cgb/ecfs/>. Alternative formats are available to persons with disabilities by sending an e-mail to fcc504@fcc.gov or by calling the Consumer & Governmental Affairs Bureau at (202) 418-0530 (voice), (202) 418-0432 (tty).

Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980, as amended (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Fourth Further Notice of Proposed Rulemaking (4th FNPRM) released in August 2018 in this proceeding. The Commission sought written public comment on the proposals in the 4th FNPRM, including comments on the IRFA. No comments were filed addressing the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.

Paperwork Reduction Act

This document does not contain new or modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. In addition, therefore, it does not contain any new or modified information collection burden for small business concerns with fewer than 25 employees, pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, see 44 U.S.C. 3506(c)(4).

Congressional Review Act

The Commission will send a copy of this Fourth R&O in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act (CRA), see 5 U.S.C. 801(a)(1)(A).

Synopsis

I. Introduction

1. The Commission takes significant steps to make spectrum available for fifth-generation (5G) wireless, Internet of Things (IoT), and other advanced services in the Upper 37 GHz (37.6 - 38.6 GHz), 39 GHz (38.6 - 40 GHz), and 47 GHz (47.2 - 48.2 GHz) bands. The Commission establishes an incentive auction that promotes the flexible-use wireless service rules that the Commission has adopted for these bands. Under the incentive auction approach and consistent with the Commission's statutory authority to conduct incentive auctions, an incumbent 39 GHz licensee may choose to relinquish the spectrum usage rights provided by its existing licenses in exchange for a share of the proceeds from the auction of new licenses. Alternatively, the incumbent may choose to receive modified licenses after the auction that are consistent with the new band plan and service rules and equivalent to its existing authorizations to operate in the 39 GHz band. Ultimately, the incentive auction approach that the Commission adopts will enhance the opportunity for incumbents and new licensees in the Upper 37 GHz and 39 GHz bands to provide valuable next-generation services.

2. The Commission's decisions, along with specific procedures to be adopted in the forthcoming Auction Comment and Auction Procedures Public Notices, will enable the Commission to move forward with an auction of the Upper 37 GHz, 39 GHz, and 47 GHz bands

by the end of 2019. In combination, the Upper 37 GHz and the 39 GHz bands offer the largest amount of contiguous spectrum in the millimeter wave bands for flexible-use wireless services—a total of 2,400 megahertz—and the 47 GHz band will provide an additional 1,000 megahertz of millimeter wave spectrum for such services. Together with the pending auctions of licenses in the 28 GHz (27.5 - 28.35 GHz) and 24 GHz (24.25 - 24.45 GHz, 24.75 - 25.25 GHz) bands, the Commission is making substantial progress in assigning high-band spectrum for innovative services, and the Commission will continue to work towards assigning additional spectrum in the mid-band range for the benefit of American consumers.

II. Background

3. In 2016, the Commission adopted Upper Microwave Flexible Use Service (UMFUS) rules for the 28 GHz, Upper 37 GHz, and 39 GHz bands, to make available millimeter wave spectrum for 5G. In 2017, the Commission expanded the UMFUS rules to cover the 24 GHz and 47 GHz bands. In addition to the licensed use opportunities in these bands, the Commission made the Lower 37 GHz (37-37.6 GHz) band available for non-Federal users through a coordination mechanism with Federal users, which the Commission will develop more fully with government and industry collaboration. Earlier this year, the Commission sought further comment on a proposed coordination mechanism and alternatives. The Commission recognizes the importance of the Lower 37 GHz band and commits to working with the National Telecommunications and Information Administration and other federal agencies to develop a sharing approach in 2019.

4. Existing licenses in the 39 GHz band consist of unpaired 50 megahertz blocks licensed by Partial Economic Area (PEA) or by Rectangular Service Area (RSA), which can cross PEA boundaries or be enveloped by them. Commission records show 11 unique incumbent licensees

hold about 5,880 active licenses in the 39 GHz band (5,590 PEA licenses and 290 RSA licenses). Measured in terms of “MHz-pops”—the product of spectrum bandwidth and covered population, only approximately one-third of the 39 GHz band is held in Commission inventory and is not authorized for use by any existing license. Currently, a number of licenses do not fit geographically into the proposed 39 GHz band plan of 100 megahertz licenses by PEA, which results in “encumbered” licenses. There are two types of encumbered licenses: (1) RSA licenses that do not conform to PEA boundaries; and (2) PEA licenses that are not authorized to provide service in the entire PEA due to an overlapping RSA license, i.e., PEA licenses that overlap geographically with pre-existing RSA licenses whose frequency assignment they must protect. The Upper 37 GHz and 47 GHz bands currently have no commercial terrestrial wireless incumbent licensees.

5. The Commission has recognized that, with respect to the 39 GHz band, “[h]olding any auction based on this fragmented band would likely be inefficient, as bidders would reasonably expect to incur significant transaction costs in assembling contiguous spectrum post-auction.” To address this issue, the 2016 Spectrum Frontiers R&O adopted a voluntary rebanding framework to allow incumbent licenses to be reconfigured to the new band plan and service areas in an effort to clear the band of encumbrances and enable licensees to aggregate licenses for contiguous frequencies. In June 2018, the Wireless Telecommunications Bureau (Bureau) issued a Public Notice announcing that it was accepting license modification applications pursuant to this voluntary rebanding process. Since that time, however, no applications to authorize such swaps have been received. Moreover, conforming existing licenses to the new band plan and service areas may be infeasible for incumbent licensees with only one pair of 50

megahertz licenses in a particular area, one 50 megahertz block in a particular area, or an RSA license.

6. Earlier this year, in the 4th FNPRM, the Commission proposed an incentive auction that potentially could clear all existing 39 GHz licenses. In addition, the Commission proposed a “voucher exchange” that would allow incumbents to modify existing spectrum usage rights, without increasing them in aggregate. The Commission indicated that this framework would make it easier for incumbents with partial license holdings to retain existing spectrum usage rights without additional license payments. Further, the Commission proposed provisions for a mandatory reconfiguration of incumbents’ existing spectrum usage rights, which an incumbent may choose to accept instead of participating in the voluntary incentive auction.

III. Discussion

A. The Need for an Incentive Auction

7. The Commission will conduct an incentive auction that can clear existing 39 GHz licenses and offer new spectrum licenses in the Upper 37 GHz, 39 GHz, and 47 GHz bands. The incentive auction process that the Commission adopts will resolve the persistent difficulties presented by the need for existing 39 GHz licenses to be transitioned efficiently to the new band plan and possibly to new service areas. Absent this process, existing 39 GHz licenses break up blocks of spectrum and fragment frequencies across the 39 GHz band, creating barriers to the deployment of next-generation services in the band. The incentive auction will solve this challenge by offering incumbent licensees the opportunity to participate in the auction to relinquish their existing licensed spectrum usage rights in exchange for a payment determined by the auction and/or to replace existing licenses with new licenses for whole blocks that will be assigned contiguous frequencies within license areas. Further, for each incumbent that does not

wish to participate in the auction, the Commission will provide the incumbent with modified licenses for contiguous 100 megahertz blocks covering full PEAs (with possibly up to one partial PEA), leaving these incumbents better able to provide next-generation services. Providing these opportunities is necessary to resolve the difficulties presented by the existing encumbered and unpaired licenses and to clear the way for assignment of a significant number of new licenses for whole blocks with contiguous frequencies within PEAs. The incentive auction thereby substantially furthers the public interest in making available spectrum for the provision of next-generation services.

8. The Commission's action implements its proposal in the 4th FNPRM for an incentive auction that potentially could clear all existing 39 GHz licenses, assign new licenses under a band plan providing 100 megahertz blocks by PEA, and provide modified 100 megahertz licenses to any incumbents that choose not to participate in the auction. Commenters respond favorably to the proposed incentive auction to resolve the difficulties presented by existing 39 GHz licenses. Consistent with the overall support, commenters also offer suggestions about specific details or request clarifications on particular points.

9. The Commission affirms its conclusion that the Commission has authority under the Communications Act to modify existing licenses in a manner that will allow for a more efficient auction and to conduct the proposed incentive auction for these bands. Commenters agree that the proposed auction is "well within [the Commission's incentive auction] authority." The statute authorizes the Commission to use an incentive auction to encourage licensees to relinquish their holdings voluntarily provided that at least two bidders compete to relinquish spectrum usage rights. The incentive auction, both as proposed in the 4th FNPRM and adopted,

is voluntary. Furthermore, the clock phase of the incentive auction format the Commission plans to use serves as both a reverse auction that will determine the amount of incentive payments as well as a forward auction to assign new flexible use licenses. As such, the Commission will conduct the auction only if there are two competing incumbent participants. As the Commission concluded in the 4th FNPRM, and no commenter disputes, as long as more than one incumbent licensee commits to relinquish its spectrum usage rights, there will be two licensees competing in the reverse auction portion of the incentive auction.

10. The Commission also decides the defining characteristics of the incentive auction and the related license modification process that will enable deployment of licenses for next-generation services in these bands. Because the clock phase of the incentive auction the Commission adopts serves as both the reverse and forward auctions, the incentive amounts offered to relinquish existing licenses will be based on the final clock phase prices in each PEA. As a result, incumbents will have the opportunity to replace at no additional cost all existing spectrum usage rights equivalent to a full 100 megahertz block with new licenses that are offered in the auction and provide equivalent rights. Further, the Commission concludes that it is necessary that incumbents that choose not to participate in the incentive auction will have their licenses modified based on a reconfiguration of their existing spectrum usage rights that is more consistent with the current band plan. As in the prior broadcast television spectrum incentive auction, and in all Commission auctions, the Commission will develop and detail all the

procedures necessary to implement its decisions in a pre-auction process framed by an Auction Comment Public Notice and Auction Procedures Public Notice.¹

B. Band Plan

11. In the 4th FNPRM, the Commission proposed to modify the 39 GHz band plan from seven 200 megahertz channels to fourteen 100 megahertz channels, in order to facilitate the repacking of incumbents without compromising the band’s potential for supporting 5G services. The Commission also proposed to modify the band plan in the Upper 37 GHz band and the UMFUS portion of the 47 GHz band from 200 megahertz to 100 megahertz channels. Maintaining the same channel width across these bands would avoid creating complexities for bidders should the Commission auction these bands together, and would allow the contiguous Upper 37 GHz and 39 GHz bands to function effectively as one 2,400 megahertz band of spectrum.

12. The Commission adopts its proposal, which is supported by nearly all commenters, to modify the band plans of the Upper 37 GHz, 39 GHz, and 47 GHz bands from 200 megahertz channels to 100 megahertz channels. The Upper 37 GHz band and the 47 GHz band will now consist of ten 100 megahertz channels each, and the 39 GHz band will consist of fourteen channels. Modifying the band plan to 100 megahertz blocks offers multiple benefits for these

¹ In this Fourth R&O, the Commission addresses suggestions and requests raised in response to the 4th FNPRM that are relevant to its decisions in this Fourth R&O. The Commission leaves for later discussion details that are more appropriately addressed later in the pre-auction process, such as opening bids. The Commission commits to moving forward expeditiously at the Commission level with public notices seeking comment and adopting detailed procedures to implement the incentive auction, i.e., the “pre-auction process.”

bands, including facilitation of the repacking of incumbents, consistency with emerging industry and international standards, and the potential for uniform channel sizes across multiple millimeter wave bands to facilitate secondary market transactions and the standardization of equipment. Further, as noted by commenters, there are potential positive auction effects that would result from standardizing the channel width across the Upper 37 GHz, 39 GHz, and 47 GHz bands, which will be auctioned together. Further, the Commission agrees with the commenters that suggest that adopting a uniform channel size for as many millimeter wave bands as possible will promote more efficient use of the spectrum.

13. This new band plan, which is heavily supported by the record, will facilitate the rationalization of existing licenses in the 39 GHz band and enable greater flexibility for licensees while remaining consistent with emerging standards for 5G. Only one commenter, TIA, opposes the proposed change to 100 megahertz channels. TIA argues that wider channels will better support 5G services and that the previously-adopted 200 megahertz channels are sufficient to ensure adequate opportunities for participation by new entrants, due to the large number of channels available. It also offers an alternative to the 4th FNPRM's proposal concerning the size of channels. While the Commission agrees with TIA that access to wide swathes of spectrum is an important goal in support of 5G and other bandwidth-intensive services, as other commenters note, licensees would still be able to achieve greater bandwidth through aggregation, particularly if the Commission facilitates aggregation of contiguous spectrum blocks in its auction design.

14. For the 39 GHz band in particular, using 100 megahertz channels will simplify the rationalization process for incumbents and reduce the number of existing licenses that are less

than a whole channel block under the new licensing scheme, given that incumbents generally hold non-contiguous paired 50 megahertz blocks (100 megahertz), as opposed to the original band plan consisting of 200 megahertz channels. Further, adopting a band plan using 100 megahertz building blocks does not prevent licensees that prefer channels wider than 100 megahertz from bidding on multiple blocks and aggregating spectrum to achieve that goal. The 100 megahertz channels the Commission adopts in this Fourth R&O will not impede carrier aggregation to achieve greater bandwidths, but merely provide additional flexibility, both for licensees for whom 100 megahertz is sufficient and for incumbents who currently hold licenses in multiples of 100 megahertz. The Commission is mindful of the need for multiple 100 megahertz blocks assigned to the same carrier to be contiguous and the Commission considers this factor in its auction design.

C. Preparing for an Incentive Auction

1. Modifying 39 GHz Licenses Based on Reconfigured Spectrum Usage Rights

15. As the Commission noted in the 4th FNPRM, the Commission has authority to modify the holdings of existing licensees “if in the judgment of the Commission such action will promote the public interest, convenience, and necessity.” No commenters dispute the Commission’s authority generally or with respect to any aspect of modifications proposed in the 4th FNPRM.

16. Prior to the incentive auction, each incumbent will be offered a reconfiguration of its existing spectrum usage rights that will conform more closely with the new band plan and service areas. Given that some incumbent licenses may cover geographic areas that do not match the PEA service areas established for the 39 GHz band, the reconfiguration may need to

combine an incumbent's spectrum rights in multiple license areas to create full spectrum blocks where possible, retaining at most one partial PEA block. Where such changes are unavoidable, the reconfiguration will maintain the overall value of spectrum usage rights by quantifying those rights by weighted MHz-Pops, as measured pursuant to the procedures established by this Fourth R&O.

17. In addition, each incumbent will be given an option to choose an alternate reconfiguration, subject to certain constraints, in order to more closely align the reconfiguration with the incumbent's interests, such as current operations. These modifications should leave each incumbent licensee better able to offer advanced services by providing contiguous frequencies within each PEA, while leaving the value of the incumbent's spectrum usage rights unchanged as measured in weighted MHz-Pops.² Each incumbent will decide whether to accept the modifications (which will take effect after the close of the auction), either as proposed by the Commission or an acceptable alternate, or to participate in the incentive auction to relinquish their existing spectrum usage rights in exchange for a share of the auction proceeds.

² Existing licensees that choose to accept modified licenses remain subject to FCC Rule 30.104(f), which states that existing 39 GHz licensees are required to make a buildout showing by June 1, 2024. See 47 CFR 30.104(f). If a licensee with a modified license is unable to make that showing by the deadline because of an expansion in the boundaries of its service area pursuant to these license modifications, that licensee may request relief from the rule, which the FCC will consider given the specific facts and circumstances of each licensee. The Commission reminds licensees that the FCC will grant waiver requests only if the petitioner can demonstrate special circumstances that warrant a deviation from the general rule and that such a deviation will serve the public interest. Northeast Cellular Co. v. FCC, 897 F.2d 1164, 1166 (D.C. Cir. 1990); WAIT Radio v. FCC, 459 F.2d 1203 (D.C. Cir. 1972). See also 47 CFR 1.925; Wireless Telecommunications Bureau Reminds Licensees of Construction Obligations, 32 FCC Rcd 4802 (WTB 2017).

The Commission directs the Wireless Telecommunications Bureau to provide each incumbent with a proposed modification implementing its decisions and to do so well in advance of the application window for the auction.

18. AT&T and Verizon both ask that the Commission clarify that all existing licenses are subject to modification, regardless of whether or not an incumbent participates in the incentive auction. All existing licenses are subject to change, regardless of the licensee's participation in the incentive auction, in order to implement the Commission's transition to a new band plan and service rules for the 39 GHz band.³ Though affected by an incumbent's decision whether to participate in the incentive auction, the exact form each license will take by the end of the incentive auction will be determined by the process discussed herein. Such modifications will include both frequency reassignments and, in many cases, geographical reassignments.

19. Quantifying Existing Spectrum Usage Rights with Weighted MHz-Pops. As a preliminary matter, an incumbent's total licensed spectrum usage rights in each PEA will be measured by adding up the MHz-Pops (bandwidth times covered population) for each of an incumbent's licenses in each PEA.⁴ To compare MHz-Pops across PEAs, the MHz-Pops in each PEA will be weighted using an index calculated using the relative prices for spectrum licenses in

³ The Commission notes that, ultimately, the Internal Revenue Service can determine the tax consequences resulting from direct license modifications or participation in an incentive auction.

⁴ The incumbent's total spectrum usage rights in a PEA divided by the MHz-pops for a full 100 megahertz block (the bandwidth of a new block) will indicate the equivalent number of blocks (whole and partial) held in the PEA under the new band plan. For RSA licenses, the Commission will consider the portion of the RSA license that falls within each PEA such that an RSA license that crosses a PEA boundary will have the relevant portion of population counted in each PEA.

each PEA in other auctions. The Commission proposed a weighting process in the 4th FNPRM. While not opposing weighting, commenters disagreed on the best data to use to set the relative weights. T-Mobile advocates using price data in imminent auctions of licenses for millimeter wave spectrum, in particular the auction of 24 GHz spectrum licenses. Verizon objects that any data from that auction may be too particular and uncertain to rely upon here, and instead it suggests using price data from Auction 1002, the auction for 600 MHz licenses. AT&T notes the difficulty of arriving at “correct” weights but does not suggest looking toward any auction in particular.

20. Data currently available for determining the weights for this incentive auction all pertain to licenses for flexible use in spectrum below 3 GHz. For instance, when preparing for the incentive auction of broadcast television spectrum, the Commission used price data from prior auctions to estimate relative price differences across PEAs for the television spectrum in 600 MHz. The subsequent prices for new 600 MHz licenses in that auction provide further data about relative differences across PEAs. As noted in the 4th FNPRM, relative spectrum license prices among geographic areas can be substantially more similar across auctions than the spectrum license prices themselves. The Commission notes that the Commission’s first auction of flexible use licenses for millimeter wave spectrum is currently ongoing and a second will follow after the first closes. Additional data regarding the prices for licenses in those auctions may be helpful, if available. Accordingly, for this incentive auction, the Commission directs the Wireless Telecommunications Bureau to set the weights considering the relative PEA price data prepared for and resulting from the broadcast television spectrum incentive auction, while also

taking into account any additional Commission data regarding prices for millimeter wave spectrum licenses to the extent practicable.

21. As supported by commenters, 2010 Census data will be used to determine the population covered by each license. The two-by-two kilometer cell grid methodology employed to determine population in particular areas in the broadcast incentive auction will be used to calculate the population for licenses for RSAs and for licenses covering a full or partial PEA.

22. To further the Commission’s goal of transitioning to the new band plan, separate licenses that are held by entities that control or are controlled by each other and/or have controlling ownership interests in common will be treated as held by one incumbent. For this purpose, the Commission will use the definition of “controlling interest” as an entity with de jure or de facto control that the Commission uses with respect to auction applications, specifically the rule prohibiting an individual or entity from having a controlling interest in more than one application to participate in the auction. Further, it may be appropriate to freeze assignments of these licenses at a future point.⁵ The Commission directs the Bureau to address whether or when it is necessary to freeze assignments of 39 GHz licenses prior to calculations of aggregate holdings.

23. In response to the 4th FNPRM, PVT Networks, Inc. (PVT) presents concerns regarding potentially significant consequences of de minimis encumbrances to its licenses. PVT holds several licenses, two of which are encumbered to an extremely small extent. PVT argues that if an RSA encumbrance of a PEA license is so small as to constitute a “fleyspeck” or de minimis

⁵ For example, when the FCC finalizes the procedures for calculating aggregate holdings, it may be necessary to preclude subsequent assignments that might disaggregate those holdings.

encumbrance (as calculated by percentage of population in a PEA), the encumbered PEA license should be treated as unencumbered.

24. The Commission agrees that it should not permit de minimis encumbrances, including PVT's, to present unnecessary challenges to incumbents that seek to preserve spectrum usage rights. Where an incumbent holds a license that covers virtually the entire population in a PEA, the Commission concludes it would be in the public interest to allow the licensee to serve the entire license area rather than considering it an encumbered block. Consistent with Commission precedent that has permitted de minimis modifications to licenses that further the public interest, the Commission concludes that incumbent licensees with existing licenses that cover at least 99 percent of the MHz-Pops in a PEA will be considered as having the equivalent of an unencumbered whole block prior to the Commission's reconfiguration.

25. Optimization to Reconfigure Existing Spectrum Usage Rights. The Commission will propose a reconfiguration of each incumbent's holdings that will reduce the total number of partial PEA block holdings without reducing the incumbent's total weighted MHz-pops across all PEAs, a process the Commission referred to as "mandatory repacking" in the 4th FNPRM. As suggested in the 4th FNPRM, once the weighted MHz-pops have been calculated for each incumbent's licenses, each incumbent's spectrum holdings will be reconfigured using an optimization procedure to reduce the number of holdings that are equivalent to less than a full 100 megahertz block in a full PEA (i.e., one that covers the entire geographic area of the PEA). The Commission anticipates that the objective of the optimization process will be to minimize the number of weighted MHz-Pops that are left over as unassigned spectrum usage rights ("white space"). This will enable the Commission to offer more contiguous spectrum in the

incentive auction. The optimization would ensure that each incumbent's total weighted MHz-pops across all the PEAs in which it has holdings would remain unchanged. In addition, each incumbent would hold at most one partial PEA block, which would be in a PEA in which it has existing holdings. Further, aggregate holdings in a PEA only would be reduced down to the greatest integer less than or equal to the incumbent's aggregate initial holdings or increased up to the least integer greater than or equal to the incumbent's aggregate initial holdings. This last constraint implies that only holdings for a partial PEA block would be moved across PEAs and that the optimization would not modify any license to require service in any PEA in which the licensee does not have existing holdings. The Commission directs the Bureau to determine the best methodology for implementing this optimization process.

26. The Commission concludes that a licensee's remaining holdings for a partial PEA block in one PEA following reconfiguration could cover a significant enough percentage of the population such that the remaining uncovered portion would qualify as de minimis, entitling the licensee to be considered as holding the entire license. That is, where after reconfiguration, an incumbent would cover nearly all of the population in a PEA, it would be unlikely that any other provider would seek to serve the remaining area in that PEA. Under these circumstances, the Commission concludes that it is reasonable to adopt a five percent de minimis standard for an incumbent's remaining partial PEA block following reconfiguration. The Commission finds it is in the public interest to adopt this higher standard for the partial PEA blocks to ensure that the incumbent licensee has the opportunity to serve the entire PEA, rather than leaving the small percentage of the population most likely unserved. As all of the details of the methodology for reconfiguring holdings are not yet final, the Commission directs the Bureau to consider

increasing this threshold as appropriate when it finalizes the optimization methodology, to no more than a total of ten percent.

27. Configuring Partial PEA Blocks. The Commission intends that the license for an incumbent's one partial PEA block will be configured by adjusting the incumbent's currently licensed area in the PEA so that it corresponds to the incumbent's reconfigured holding in that PEA. For example, if an incumbent's partial PEA block covers one-half of the MHz-pops in the PEA, and the reconfigured holding in that PEA is one-quarter the MHz-pops, the partial PEA block will consist of 100 megahertz covering an area of the PEA fully contained within its current license that encompasses 25 percent of the population in that PEA. Similarly, if the reconfigured fractional holdings are greater than the current MHz-Pops in the PEA, the geographic coverage will be adjusted in a manner that fully contains the currently licensed area but remains within the boundaries of the PEA. The geography of a current encumbered license will be adjusted to conform to an incumbent's new fractional holdings, rather than adjusting the bandwidth, because the Commission recognizes that licensees of millimeter wave spectrum prefer 100 megahertz blocks at a minimum for advanced services, and incumbent licensees may better be able to provide service in an area closer to the footprints of their original licenses. The proposed geographic boundaries for the partial PEA block will be as similar as possible to the incumbent's original holdings in that PEA, recognizing that the remaining partial PEA block may cover a larger or smaller percentage of pops than the existing license.

28. In addition, a whole PEA block will be removed from the auction inventory when providing for licensing partial blocks based on reconfigured holdings. As a consequence, licenses for partial PEA blocks will be accompanied by unassigned white space in the remainder of the

block. Licenses for partial PEA blocks will be needed only for an incumbent that both chooses to receive modified licenses and that chooses not to relinquish its rights to a partial PEA block in exchange for an incentive payment. Leaving the rest of the block unassigned will help to preserve the structure of the new band plan going forward. Although this approach potentially will result in unassigned white space, the total white space that will result is extremely low relative to the total 39 GHz band. The Commission will seek comment in the Auction Comment Public Notice regarding assignment of the remaining unassigned white space.

2. Incumbent Options Following Reconfiguration

29. After the results of the reconfiguration process are announced, an incumbent 39 GHz licensee will have three options. It can choose to: (1) have its licenses modified based on the Commission's proposed reconfiguration of its holdings; or (2) have its licenses modified based on its proposed alternative reconfiguration that yields the same or fewer weighted MHz-pops and satisfies certain specified conditions; or (3) commit to relinquish its licenses in exchange for an incentive payment and/or the ability to bid for new licenses.

30. Incumbents Not Participating in the Incentive Auction. The Commission recognizes that an incumbent licensee may wish not to participate in the incentive auction to relinquish its existing spectrum usage rights, but may have existing holdings that do not correspond to full new blocks; in such cases the licensee may benefit from an alternative reconfiguration of its existing licenses. The Commission will allow each incumbent, once it reviews the results of the Commission's reconfiguration, to propose modifications to its existing licenses before it decides whether it will participate in the auction. If the incumbent ultimately

decides to participate in the auction, however, any proposed modifications to its existing licenses will not have any effect.

31. To be an acceptable alternative reconfiguration, the Commission anticipates that the incumbent's proposal must satisfy the same requirements as the Commission's modification proposal, except that, in contrast to the Commission's proposed reconfiguration, an incumbent's proposal need not minimize the weighted MHz-Pops remaining as white space in the one PEA in which the incumbent is left with the equivalent of a partial PEA block. That is, in a proposed reconfiguration, an incumbent can hold at most one partial PEA block, which would be in a PEA in which it has existing holdings. In addition, proposed 100 megahertz full PEA licenses must be in PEAs in which it has existing holdings. Finally, aggregate holdings in a PEA can only be reduced down to the greatest integer less than or equal to the incumbent's aggregate initial holdings or increased up to the least integer greater than or equal to the incumbent's aggregate initial holdings. If a licensee chooses an acceptable alternate reconfiguration proposal, the incumbent can indicate that it will not participate in the incentive auction and instead opt to have its licenses modified after the auction based on its reconfiguration proposal. The Commission directs the Bureau to announce the methodology and process for each incumbent to propose alternate reconfigurations and to elect how to proceed, and to educate incumbents about the process.

32. Even though an incumbent choosing to have its licenses modified, either as configured by the Commission or under an acceptable alternative proposal, cannot bid on new licenses in the incentive auction, it will be allowed to relinquish the licensed spectrum usage rights associated with its single partial PEA block holding in exchange for an incentive payment.

The payment amount will be determined in the auction and will be equivalent to the incumbent's fractional share of the block times the final clock phase price of a generic spectrum block in that PEA. For example, an incumbent that relinquishes a reconfigured partial PEA holding of .6 may receive 60% of the final clock phase price for generic blocks in that PEA. If an incumbent relinquishes holdings for a partial PEA block, the incentive auction can offer an additional full block of spectrum in the auction inventory. An incumbent that accepts reconfigured holdings and therefore does not fully participate in the incentive auction will not have the option of relinquishing any full block licenses in exchange for incentive payments however, nor will it be able to bid on new licenses in the auction.

33. An incumbent that chooses not to participate in the auction and instead chooses to accept reconfigured holdings, either corresponding to the results of the FCC optimization or to an acceptable alternative reconfiguration, will have frequency-specific licenses assigned for its reconfigured holdings after the incentive auction has concluded. New frequencies for the modified licenses will be determined in the assignment phase of the incentive auction. Incumbent licensees that accept reconfigured holdings will not be permitted to place bids for specific frequencies in the assignment phase, however. As described as part of the assignment phase, all licensees should be issued licenses with contiguous frequencies within a category of a PEA regardless of whether they participate in the auction or bid in the assignment phase.

34. Incumbents Participating in the Incentive Auction. Incumbents that commit to relinquishing all of their existing licenses will receive "vouchers" sufficient to win blocks in the

auction equivalent to their existing PEA holdings.⁶ Such incumbents do not need to rebid on spectrum blocks equivalent to their existing holdings, however, unless they want to continue to hold licenses in those areas. Participating incumbents can apply the vouchers toward payments for blocks in other PEAs and receive a cash incentive payment if the value of their vouchers exceeds their net auction obligations. Auction participants can also simply relinquish their holdings and choose not to bid on any new licenses, in which case they will receive a cash incentive payment for their vouchers.

35. Vouchers for existing holdings in a PEA will be valued at the final clock phase price of a generic spectrum block in the PEA. As a result, a participating incumbent with holdings equivalent to a full block in a PEA can retain the block without making any additional payment or can receive an incentive payment equal to the final clock phase price of a block in that PEA if it no longer wishes to hold the block. The incumbent then will have the option of bidding an additional amount in the assignment phase to obtain a particular frequency for its new license, but it will receive contiguous frequency blocks within a category regardless of whether it makes an additional assignment phase bid.

36. In addition to having the opportunity to modify its existing spectrum holdings through participation in the incentive auction, an incumbent that chooses to participate in the auction also will be able to make pre-bidding exchanges in its existing holdings of partial PEA

⁶ For ease of discussion, the Commission describes incentive payments for incumbents relinquishing spectrum usage rights as “vouchers.” See 4th FNPRM at para. 20. Notwithstanding short-hand descriptions of the process, incumbents do not “exchange” licenses for vouchers or at any point receive a “voucher” that has any independent substance.

blocks, subject to constraints (described below as “Round Zero” of the auction). As described below, this will encourage auction participation by enabling an incumbent to manage uncertain costs associated with retaining spectrum holdings in the incentive auction.

D. Incentive Auction Structure

1. Spectrum Available for New Licenses

37. Following the choices made by incumbent 39 GHz licensees to accept modified licenses based on reconfigured holdings or to relinquish their existing spectrum usage rights, the Commission will offer new licenses in the incentive auction for all available spectrum in the Upper 37 GHz, 39 GHz, and 47 GHz bands.⁷ The available spectrum will consist of spectrum throughout these bands, less any quantity of spectrum that must be retained to provide non-participating incumbents with modified licenses. If all incumbent licensees choose to participate, that quantity will be zero and the Commission will offer new licenses for 3,400 megahertz of spectrum, or 34 licenses in every PEA. New licenses in the auction, whether won by incumbents relinquishing existing licenses or by new applicants, will authorize only the use of whole spectrum blocks in 100 megahertz blocks.

⁷ The Commission does not make any decision regarding suggestions to auction licenses for additional bands of spectrum with the three bands already identified. Though licenses for the Upper 37 GHz, 39 GHz, and 47 GHz bands in one auction will provide up to 3,400 megahertz in every PEA for advanced services, various commenters encourage the Commission to consider adding other bands. For example, commenters argue that because the 42 GHz band is in the same tuning range as the Upper 37 GHz and 39 GHz bands, the Commission should auction all of these bands together, which would generate economies of scale and reduce equipment costs. The Commission may consider whether other bands are in fact ready and suitable for inclusion in the auction of licenses for these three bands, after notice and comment, in the Auction Procedures Public Notice.

2. Eligibility

38. Any party eligible to hold a license in these bands will be eligible, subject to meeting the Commission's application requirements, to participate in the auction for new licenses, except for incumbent 39 GHz licensees that accept modified licenses as reconfigured and decline to relinquish all existing licenses. The Commission proposed this qualification in the 4th FNPRM. The Commission noted that the contrary approach of allowing an incumbent to retain existing licenses that might encumber the band while also bidding for whole blocks would appear to give incumbents an unfair advantage. Requiring incumbents to relinquish all existing licenses as a prerequisite to bidding on new licenses will facilitate the assignment of licenses to the entities that value them most highly, thus serving the public interest. All commenters addressing this issue support this requirement.

3. Round Zero Adjustments to Incumbent Spectrum Usage Rights – Voucher Exchange

39. Prior to round one of the incentive auction clock phase, the Commission will offer incumbent licensees that decide to participate in the auction a limited opportunity to redistribute their initial voucher holdings across the PEAs in which they hold rights for a partial PEA block (Round Zero). In the 4th FNPRM, the Commission proposed such a “voucher exchange” to address concerns that an incumbent with existing licenses covering RSAs or partial PEAs may face significant uncertainty about the cost of obtaining full licenses in the incentive auction that cover its current partial PEA block holdings.

40. More specifically, after the FCC quantifies and aggregates existing usage rights in each PEA, an auction participant can exchange any vouchers equivalent to a partial PEA block

among the PEAs where it has such vouchers, subject to two restrictions. First, the total value of its holdings, in weighted MHz-Pops using the FCC weights, following the exchange must be less than or equal the total weighted MHz-Pops of its initial holdings. Second, aggregate holdings in a PEA can only be reduced down to the greatest integer less than or equal to its aggregate initial holdings or increased up to the least integer greater than or equal to its aggregate initial holdings.⁸ As a result, an incumbent thus can increase or decrease its vouchers in a PEA by strictly less than one, i.e., it may increase a partial holding of 0.5 to 0.75 or to 1, but cannot increase it to 1.2. No adjustments may be made in a PEA in which an incumbent has no existing licenses or has spectrum usage rights equivalent to a whole number of whole blocks.

41. These restrictions are similar to the constraints that the Commission contemplates using in the FCC reconfiguration optimization, except that in this case incumbents could hold vouchers equivalent to partial PEA blocks in more than one of its PEAs. Allowing an incumbent in the auction to hold vouchers equivalent to partial PEA blocks enables the incumbent to better hedge against uncertainty about auction prices relative to the FCC weights. An incumbent in the auction already has committed to relinquish its current licenses, so there is no need to limit vouchers that are equivalent to partial PEA blocks, in contrast to the need to limit reconfigured

⁸ The Commission clarifies, as AT&T requests, that an incumbent may adjust its spectrum usage rights without necessarily creating an amount equivalent to a whole number of blocks. The Commission also proposed limiting the ability of an incumbent to make adjustments in a PEA in which all incumbents could not do so. 4th FNPRM at para.

34. In response, AT&T proposes prioritizing the rights of incumbents to make adjustments in such situations. Initial analysis of the data indicates that there are no PEAs in which each incumbent could not make adjustments that otherwise comply to the limitations the Commission proposes. Accordingly, the Commission need not adopt any limitation or prioritization for such a scenario.

holdings equivalent to partial PEA blocks when the holdings may become the basis for modified licenses.

42. Commenters differ on the question of permitting incumbents to redistribute their existing spectrum usage rights prior to bidding for new licenses. CCA cautions against the risk of creating unwarranted advantages for incumbent licensees. T-Mobile is concerned that establishing the process to allow incumbents to adjust their holdings prior to the auction will delay the determination of actual auction procedures. T-Mobile also raises concerns over the risk that the Commission may err in setting the relative weights of incumbent holdings in different PEAs. This could inadvertently create windfalls for incumbents that incumbents might further amplify through any pre-auction adjustments. T-Mobile further argues that there is no need to allow incumbents to modify their holdings if all the holdings will be relinquished in exchange for incentive payments. The Commission finds, however, that the limitations the Commission imposes on potential modifications will minimize any potentially unfair advantages to incumbents in the voluntary exchange.

4. Other Structural Issues

43. Incumbent Bidding Credits for New Licenses. Incumbents, like any other applicant in the Commission's auctions for spectrum licenses, may seek designated entity bidding credits as small businesses or rural service providers.⁹ In the 4th FNPRM, the Commission noted the

⁹ The Commission also offers a bidding credit when a winning bidder provides service to qualifying tribal land with a license won at auction. 47 CFR 1.2110(f)(3). Commission rules already address the possibility that auction proceeds net of both other designated entity bidding credits and other commitments reflected in an auction reserve price may not be sufficient to pay all tribal land bidding credits that winning bidders seek after the auction. 47 CFR 1.2110(f)(3)(v). In this case, the Commission adopts a net revenue requirement for this auction to assure that

potential for a scenario in which an incumbent licensee entitled to bidding credits for new licenses might participate in the incentive auction, win licenses that replace its existing spectrum holdings for which it would owe no additional payment, and be entitled to a bidding credit. This scenario effectively would leave a surplus payment that this incumbent might receive as a cash incentive payment, despite also receiving new licenses that replicate its prior holdings. The Commission proposed to address this anomaly by crediting such incumbents with a bidding credit only with respect to any outstanding cash payments for new licenses that offer spectrum usage rights beyond its aggregate spectrum usage rights prior to the auction. All commenters addressing this issue agree with the Commission's proposal. Accordingly, bidding credits for participating incumbent licensees will apply only to cash payments for new licenses.

44. Incumbents Bidding Up Incentive Payments. The Commission noted in the 4th FNPRM that the structure of the proposed incentive auction appeared to allow incumbents to bid up new licenses in order to increase the amounts of corresponding incentive payments. The Commission sought comment on this scenario. The Commission agrees with commenters that the concern is largely theoretical and that no action is needed to address it. Incumbent

auction proceeds will be sufficient to make all incentive payments owed. Accordingly, the Commission specifies that this provision shall apply to the incentive auction. Id. (“in any auction with reserve price(s) in which the Commission specifies that this provision shall apply”). The Commission's action allows tribal land bidding credits to be paid in full so long as aggregate auction proceeds net of all applicable bidding credits and aggregate incentive payments are greater than the total amount of tribal bidding credits sought. If not, however, the Commission's action applies established procedures for reducing a tribal land bidding credit sought by any incentive auction winning bidder in proportion to the ratio of available proceeds and the total amount of tribal land bidding credits sought.

licensees that bid up new licenses will risk winning the new license rather than receiving the corresponding incentive payment. That risk should deter insincere bidding to increase incentive payments.

45. Assuring Full Incentive Payments. The Commission sought comment in the 4th FNPRM about whether incumbents may relinquish spectrum if the demand for new licenses in a PEA may be met without relinquished spectrum. The Commission discussed several alternatives for prioritizing among incumbent relinquished spectrum blocks, either relinquished rights to full 100 megahertz PEA blocks or partial PEA blocks, as well as prioritizing Commission-held spectrum blocks. The Commission noted that satisfying limited demand with Commission spectrum could minimize payments to incumbents. The Commission also observed, however, that regardless of “the proceeds or relinquishments in a particular PEA” the incentive auction could proceed “[p]rovided that the total auction proceeds exceed the total incentive payments[.]” That is, the level of demand in a single PEA need not determine whether the Commission can make incentive payments for spectrum relinquished in that PEA. Commenters favor the Commission making all incentive payments even where incumbent spectrum is not needed for new licenses in a particular PEA, i.e., if there is a shortfall in demand in that PEA relative to the supply of spectrum made available in the auction. The Commission agrees that, so long as the total auction proceeds are sufficient, making all incentive payments irrespective of the level of demand in each PEA will serve the public interest. Accordingly, the Commission will adopt a net revenue requirement for this auction that, if met, will ensure that the auction proceeds are sufficient to cover all incentive payments.

46. Making all incentive payments even when demand in a PEA falls short of the supply of available blocks serves the public interest in several ways. Assuring incumbents that all incentive payments will be made, irrespective of the demand in any given PEA, will encourage incumbents to relinquish their licenses and participate in the auction, which will facilitate the smooth transition of the 39 GHz band. Moreover, incumbent auction participants will have greater certainty about their respective auction budgets, including incentive payments, if they know they will receive a payment for usage rights they wish to relinquish, rather than being required to retain such rights. Incumbents then will be able to bid with more certainty for the licenses they value most highly. As a result, the auction will be more likely to assign new licenses to bidders that will use the licenses most effectively, enhancing benefits to consumers.

47. Separately, there is an additional public interest benefit to ensuring that an incumbent that otherwise chooses to accept modified licenses will receive an incentive payment if it also chooses to relinquish its spectrum usage rights in its one partial PEA block. Providing this assurance makes it more likely that the incumbent will relinquish its partial PEA rights, thereby allowing a new license to be issued for a full 100 megahertz block covering the entire PEA and facilitating the transition to the new 39 GHz band plan. Accordingly, the Commission concludes that it will make all incentive payments, so long as there are sufficient auction proceeds available.

48. Incentive payments for relinquished spectrum usage rights in a PEA where there is insufficient demand will be low. As the Commission noted in the 4th FNPRM, the final clock phase price for a whole block, and the corresponding incentive payment, will equal the minimum opening bid when demand does not exist for all the available blocks in a PEA. Absent

demand for all available blocks in a PEA, the price for a whole block in the PEA cannot rise above the minimum opening bid. Consequently, auction proceeds as low as the sum of all minimum opening bids would assure that any shortfall in demand would not prevent making all incentive payments in full.

49. A net revenue requirement to address much higher incentive payments could be necessary, however, due to another reason. Specifically, auction proceeds otherwise may not be sufficient to make all incentive payments in full. In the 4th FNPRM, the Commission sought comment on the possibility that bidding credits might reduce auction proceeds to less than the amount needed to pay all incentive payments owed incumbents.¹⁰ In response, commenters propose that in such a case all incentive payments should be proportionally reduced. The Commission concludes, however, that it should instead adopt procedures to help assure incumbent auction participants that all incentive payments will be paid in full.

50. In the broadcast incentive auction, the Commission adopted a “final stage rule” to assure that auction proceeds would be sufficient to satisfy specified conditions. In part, that rule implemented a net revenue requirement for the auction based on the incentive payments set in the auction and that took into account bidding credits available to bidders for new licenses. Under such a net revenue requirement, the auction will not close unless auction proceeds are sufficient to cover all incentive payments owed. The Commission will establish procedures in this auction implementing a net revenue requirement based on auction bids that will assure that

¹⁰ Incentive payments will be determined by prices set in the auction. Winning bidders eligible for bidding credits, however, will pay less than the full auction price. Any such reductions will reduce the auction proceeds regardless of the Commission’s decision to apply bidding credits for incumbent winning bidders only to net cash payments.

auction proceeds are sufficient to cover all incentive payments owed, including potential discounts to new licensees that qualify for bidding credits. The Commission will specify the procedures through the Auction Comment Public Notice and Auction Procedures Public Notice.

51. Incumbent Upfront Payments. Verizon advocates for crediting participating incumbent licensees with upfront payments for existing licenses that they agree to relinquish. Verizon appears to suggest that an incumbent that might win licenses without making additional cash payments for winning bids should be credited with an upfront payment sufficient to obtain the bidding eligibility needed to make such bid(s). Verizon observes that payment defaults cannot occur if an incumbent can cover the auction price with its incentive payment. While Verizon is correct about one typical purpose of upfront payments – to mitigate against defaults for lack of payment – the Commission notes that a winning bidder may default for reasons other than failing to make a winning bid payment. Accordingly, the Commission does not grant Verizon’s request at this time, and it will address upfront payments through the Auction Comment Public Notice and the Auction Procedures Public Notice.

E. Incentive Auction Bidding

52. As proposed in the 4th FNPRM, the Commission will use a two-phase auction procedure. Commenters generally support the proposal for how bidding will be conducted. Accordingly, in the first phase, participants will bid for generic spectrum blocks by PEA in the Upper 37, 39, and 47 GHz Bands using an ascending clock auction. The second phase will assign frequency-specific licenses to the winners of generic blocks in the bands.

1. Auction Clock Phase

53. In the clock phase of the incentive auction, bidders will indicate their demand for quantities of spectrum blocks in two generic bidding categories in each PEA. The clock phase will set a uniform price for generic blocks in each category in each PEA. Bidding for generic spectrum blocks by category will facilitate a speedier auction than if bidding were conducted for large numbers of unique licenses that nonetheless are reasonably substitutable. Where blocks are sufficiently similar, bidders can bid for a quantity of blocks rather than bidding separately for unique licenses, enabling the auction to reach a clearing price for all available blocks in a shorter time.

54. Categories of Spectrum Blocks. The Commission will offer 100 megahertz blocks of spectrum in two bidding categories. The first category will consist of generic blocks in the Upper 37 GHz and 39 GHz bands. The Commission effectively has treated the Upper 37 GHz and 39 GHz bands as one contiguous 2,400 megahertz band of spectrum. The bands are adjacent. In addition, both are subject to the same service rules and operability requirement. Accordingly, it is appropriate to consider blocks in these two bands as interchangeable and offer them as one category in the auction.

55. The Commission will offer 100 megahertz blocks of 47 GHz spectrum as a second generic bidding category. In contrast to the Upper 37 GHz and 39 GHz bands, the 47 GHz band is not contiguous with the other two and does not share the same operability requirement with respect to equipment for using the band. Consequently, the Commission will treat 47 GHz blocks distinctly from Upper 37 GHz and 39 GHz blocks and offer 47 GHz blocks as a separate category in the auction.

56. Bidding Process. The rules for bidding in the first phase of the forward auction will be similar to those used in the clock portion of the forward auction in the broadcast incentive auction and in the auction of licenses for 24 GHz spectrum blocks. The clock price for a category of blocks in a PEA will increase as long as the demand for blocks exceeds the supply of blocks.

57. Bidding will continue until the number of blocks demanded by bidders in each category of generic blocks in each PEA does not exceed the number of such blocks available. At that point, bidders demanding blocks in a category at the current price will be deemed clock phase winning bidders. The Commission will determine the exact procedures for clock phase bidding in the Auction Comment and Auction Procedures Public Notices.

2. Auction Assignment Phase

58. As proposed in the 4th FNPRM, the incentive auction will include a second phase that will determine the frequencies for licenses to be assigned to the winners of generic spectrum blocks. The Commission anticipates being able to assign contiguous frequencies within a category and a PEA to winners of multiple blocks in a category and a PEA. In the assignment phase, winning bidders for generic blocks will have an opportunity to submit sealed bids by PEA specifying additional amounts, if any, that they would be willing to pay for licenses on particular frequencies. Winning clock phase bidders would not be required to bid in the assignment phase or otherwise pay more than the price for generic blocks in the clock phase and would still be assured to have contiguous frequencies assigned to all of their licenses in the same category in a PEA. Incumbents that elect to receive modified licenses instead of bidding for new licenses in the auction will be assigned frequencies in the assignment phase but cannot bid for particular frequencies in the assignment phase. The Commission will detail the exact procedures for

bidding in the assignment phase in the Auction Comment Public Notice and Auction Procedures Public Notice. The Commission expects that the final procedures will be similar to those used in the assignment portion of the auction of licenses for 24 GHz spectrum blocks.

F. Post-Auction Transition

59. Incumbents will retain their existing licenses until after the auction, when either the existing licenses are modified or relinquished, and new licenses are issued. New licenses will be assigned based on the results of bidding in the incentive auction.

60. Existing Secondary Licenses. Diversified Communications, Inc. (DCI) asks the Commission to include secondary local television transmission service (LTTS) licensees in any transition plan and reimbursement program it creates for primary licensees in the band. DCI argues that in analogous situations in the past, the Commission has made accommodations for secondary services.

61. It is a well-established principle under Commission precedent and its rules that secondary operations cannot cause harmful interference to primary operations nor claim protection from harmful interference from primary operations. As such, secondary users are not entitled to relocation or reimbursement from new entrants. Indeed, as T-Mobile points out, in the broadcast incentive auction, the Commission specifically considered LPTV and TV translator stations television stations ineligible to participate in the reverse auction or to receive compensation because they had not been granted primary status. These secondary users were later granted compensation rights only by Congressional directive. Accordingly, T-Mobile, Verizon, and AT&T argue the Commission need not utilize the incentive auction structure to reclaim DCI's spectrum rights, pay for DCI's repacking, or reimburse its investment in equipment

purchased for 39 GHz operations. In consideration of the above, the Commission declines to create any specific transition plan or reimbursement program for secondary operations as part of the 39 GHz auction. Such users were fully aware of their secondary status at the time of establishing these secondary operations with the knowledge that they would be required to modify their operations at any time to protect licensees.

IV. Final Regulatory Flexibility Analysis

62. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the Fourth Further Notice of Proposed Rulemaking (4th FNPRM) released in August 2018 in this proceeding. The Commission sought written public comment on the proposals in the 4th FNPRM, including comments on the IRFA. No comments were filed addressing the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.

A. Need for, and Objectives of, the Fourth R&O

63. In the Fourth R&O, the Commission takes major steps to make spectrum available for 5G, IoT, and other advanced services in the Upper 37 GHz (37.6 - 38.6 GHz), 39 GHz (38.6 - 40 GHz), and 47 GHz (47.2 - 48.2 GHz) bands. The Commission adopts the proposal set forth in the 4th FNPRM to conduct an incentive auction that can clear existing 39 GHz licenses and offer new spectrum licenses in the Upper 37 GHz, 39 GHz, and 47 GHz bands.

64. The Fourth R&O also modifies the band plans for the 39 GHz, Upper 37 GHz, and 47 GHz bands from 200 megahertz to 100 megahertz channels for the part 30 UMFUS. The incentive auction that the Commission adopts will promote the flexible-use wireless services rules that the Commission has adopted for these bands. Moreover, the incentive auction

process will resolve the persistent difficulties presented by the need for existing 39 GHz licenses to be transitioned efficiently to the new band plan and possibly new service areas.

65. In the Fourth R&O the Commission decides that it will make all existing licenses conform more closely with the new band plan and service rules by proposing modifications based on reconfigurations to each incumbent's spectrum usage rights under existing licenses. The reconfiguration will preserve the existing spectrum rights of incumbents as much as possible, and where variations are unavoidable, maintain overall spectrum usage rights. An incumbent can choose to accept the reconfiguration, propose an alternative reconfiguration, or instead elect to participate in the auction. An incumbent that chooses not to participate in the incentive auction will have frequencies assigned for modified licenses based on reconfigured spectrum usage rights after the incentive auction has concluded.

66. The Fourth R&O sets forth details about incumbents that choose to participate in the incentive auction. Incumbents that choose to participate in the incentive auction will relinquish existing spectrum licenses and receive "vouchers" sufficient to win blocks in the auction equivalent to their existing Partial Economic Area (PEA) holdings. A participating incumbent will be able to make pre-bidding exchanges in its existing holdings of partial PEA blocks, subject to constraints.

67. The Fourth R&O emphasizes that auction participants do not need to rebid on spectrum blocks equivalent to their existing holdings, however, but can apply the vouchers toward payments for blocks in other PEAs, receiving a cash incentive payment if the value of their vouchers exceeds their net auction obligations. Auction participants can also simply

relinquish their holdings and choose not to bid on any new licenses, in which case they will receive a cash incentive payment for their vouchers.

68. The Fourth R&O also adopts the proposal to implement a two-phase incentive auction that will offer new licenses. In the first phase, participants would bid to win generic spectrum blocks using an ascending clock auction that would determine a uniform price in each category in each PEA. Any party eligible to hold a license in these bands will be eligible to participate in the auction for new licenses, except for incumbent 39 GHz licensees that decline to relinquish existing licenses. The second phase would assign specific-frequency licenses by PEA that would aim to ensure contiguity within each PEA. Because the spectrum blocks in the Upper 37 GHz and 39 GHz bands can be treated as largely interchangeable within a PEA, they will be offered as one category of generic blocks in a clock auction. The Commission will treat 47 GHz blocks distinctly from Upper 37 GHz and 39 GHz blocks and offer 47 GHz blocks as a separate category in the auction. Winning bidders for generic blocks in the clock phase would have an opportunity to submit sealed bids by PEA specifying additional amounts, if any, that they would be willing to pay for licenses in the PEA on particular frequencies in the assignment phase. Winning clock phase bidders would participate in the assignment phase only if they so choose. Consequently, they would not be required to bid in the assignment phase or otherwise pay more than the price for generic blocks in the clock phase. Regardless of participation in the assignment phase, the assignment phase would aim to assign contiguous frequency blocks within a category in a PEA to a bidder that wins multiple blocks. Incumbents that elect to receive modified licenses instead of bidding for new licenses in the auction will be assigned frequencies in the assignment phase but cannot bid.

69. Overall, the decisions in the Fourth R&O are designed to facilitate broadband deployment, including 5G services, by providing opportunities to make it easier for licensees in the band to rationalize their existing holdings into contiguous swathes of spectrum, and by offering new licenses of contiguous spectrum at auction while protecting incumbents' existing spectrum usage rights. This will ensure that this spectrum is used efficiently and will foster the development of new and innovative technologies and services, as well as encourage the growth and development of a wide variety of services, ultimately leading to greater benefits to consumers.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

70. There were no comments filed that specifically addressed the proposed rules and policies presented in the IRFA.

C. Response to Comments by the Chief Counsel for Advocacy of the Small Business Administration

71. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.

72. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

73. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the rules adopted herein. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.” A “small business concern” is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.

74. Small Businesses, Small Organizations, Small Governmental Jurisdictions. The Commission’s actions, over time, may affect small entities that are not easily categorized at present. The Commission therefore describes here, at the outset, three broad groups of small entities that could be directly affected herein. First, while there are industry specific size standards for small businesses that are used in the regulatory flexibility analysis, according to data from the SBA’s Office of Advocacy, in general a small business is an independent business having fewer than 500 employees. These types of small businesses represent 99.9% of all businesses in the United States which translates to 28.8 million businesses.

75. Next, the type of small entity described as a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.” Nationwide, as of August 2016, there were approximately 356,494 small

organizations based on registration and tax data filed by nonprofits with the Internal Revenue Service (IRS).

76. Finally, the small entity described as a “small governmental jurisdiction” is defined generally as “governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.” U.S. Census Bureau data from the 2012 Census of Governments indicate that there were 90,056 local governmental jurisdictions consisting of general purpose governments and special purpose governments in the United States. Of this number there were 37,132 general purpose governments (county, municipal and town or township) with populations of less than 50,000 and 12,184 special purpose governments (independent school districts and special districts) with populations of less than 50,000. The 2012 U.S. Census Bureau data for most types of governments in the local government category show that the majority of these governments have populations of less than 50,000. Based on this data, the Commission estimates that at least 49,316 local government jurisdictions fall in the category of “small governmental jurisdictions.”

77. Wireless Telecommunications Carriers (except Satellite). This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services. The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 show that there were 967 firms that operated for the entire year. Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of

1,000 employees or more. Thus under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

78. Fixed Microwave Services. Microwave services include common carrier, private-operational fixed, and broadcast auxiliary radio services. They also include the Upper Microwave Flexible Use Service, the Millimeter Wave Service, Local Multipoint Distribution Service (LMDS), the Digital Electronic Message Service (DEMS), and the 24 GHz Service, where licensees can choose between common carrier and non-common carrier status. At present, there are approximately 66,680 common carrier fixed licensees, 69,360 private and public safety operational-fixed licensees, 20,150 broadcast auxiliary radio licensees, 411 LMDS licenses, 33 24 GHz DEMS licenses, 777 39 GHz licenses, and five 24 GHz licensees, and 467 Millimeter Wave licenses in the microwave services. The Commission has not yet defined a small business with respect to microwave services. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite) and the appropriate size standard for this category under SBA rules is that such a business is small if it has 1,500 or fewer employees. For this industry, U.S. Census Bureau data for 2012 shows that there were 967 firms that operated for the entire year. Of this total, 955 had employment of 999 or fewer, and 12 firms had employment of 1,000 employees or more. Thus under this SBA category and the associated standard, the Commission estimates that the majority of fixed microwave service licensees can be considered small.

79. The Commission does not have data specifying the number of these licensees that have more than 1,500 employees, and thus is unable at this time to estimate with greater

precision the number of fixed microwave service licensees that would qualify as small business concerns under the SBA's small business size standard. Consequently, the Commission estimates that there are up to 36,708 common carrier fixed licensees and up to 59,291 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services that may be small and may be affected by the rules and policies proposed herein. The Commission notes, however, that both the common carrier microwave fixed and the private operational microwave fixed licensee categories includes some large entities.

80. All Other Telecommunications. The "All Other Telecommunications" category is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry." The SBA has developed a small business size standard for "All Other Telecommunications," which consists of all such firms with gross annual receipts of \$32.5 million or less. For this category, U.S. Census Bureau data for 2012 shows that there were a total of 1,442 firms that operated for the entire year. Of these firms, a total of 1,400 firms had gross annual receipts of under \$25 million and 42 firms had gross annual receipts of \$25 million to \$49, 999,999. Thus, the Commission estimates that a majority of "All Other Telecommunications" firms potentially affected by the Commission's actions can be considered small.

81. Radio and Television Broadcasting and Wireless Communications Equipment

Manufacturing. This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by these establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.” The SBA has established a size standard for this industry of 1,250 employees or less. U.S. Census Bureau data for 2012 shows that 841 establishments operated in this industry in that year. Of that number, 828 establishments operated with fewer than 1,000 employees, 7 establishments operated with between 1,000 and 2,499 employees and 6 establishments operated with 2,500 or more employees. Based on this data, the Commission concludes that a majority of manufacturers in this industry is small.

E. Description of Projected Reporting, Recordkeeping, and other Compliance Requirements

82. The Commission expects the rules adopted in the Fourth R&O will impose new or additional reporting or recordkeeping and/or other compliance obligations on small entities as well as other applicants and licensees. The projected reporting, recordkeeping, and other compliance requirements in the Fourth R&O will apply to entities slightly differently depending on whether they accept modified licenses, relinquish spectrum usage rights entirely, relinquish spectrum rights and seek new licenses to continue to operate in the band, or are new entrants seeking new licenses. The requirements the Commission adopts should benefit small entities

by giving them more information, more flexibility, and more options for gaining access to wireless spectrum.

83. The Commission has designed the process of applying to participate in auctions involving spectrum license auctions generally, including the incentive auction, to minimize reporting and compliance requirements for applicants, including small business applicants. The Commission expects that the filing, recordkeeping and reporting requirements associated with the demands described below will require small businesses as well as other entities that intend to utilize these new UMFUS licenses to use professional, accounting, engineering or survey services in order to meet these requirements. Incumbent licensees that volunteer to relinquish spectrum usage rights will make a binding commitment to do so in a submission to the Commission. Parties desiring to participate in an auction for new licenses, including incumbents and new entrants, either of which may be small entities, will begin by filing streamlined, short-form applications in which they certify under penalty of perjury as to their qualifications. The Commission will provide detailed instructions for each auction applicant to maintain the accuracy of its respective short-form application electronically using the FCC Auction Application System and/or by direct communication with the Auctions Division. The Commission also will provide detailed instructions for any incumbent eligible to be paid an incentive payment regarding financial information that must be provided to the Commission, as well as instructions for any winning bidder for new licenses regarding the license application process. As with other winning bidders, any small entity that is a winning bidder will be required to comply with paying the net amount of its winning bids and electronically submitting a properly completed long-form application (FCC Form 601) and required exhibits for each

license won. A winning bidder claiming eligibility for a bidding credit must demonstrate its eligibility in its FCC Form 601 post-auction application for the bidding credit sought.

84. Small entities and other applicants for UMFUS licenses will be required to file license applications using the Commission's automated Universal Licensing System (ULS). ULS is an online electronic filing system that also serves as a powerful information tool, one that enables potential licensees to research applications, licenses, and antenna structures. It also keeps the public informed with weekly public notices, FCC rulemakings, processing utilities, and a telecommunications glossary. Small entities, like all other entities who are UMFUS applicants, must submit long-form license applications through ULS using Form 601, FCC Ownership Disclosure Information for the Wireless Telecommunications Services using FCC Form 602, and other appropriate forms.

F. Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

85. The RFA requires an agency to describe any significant alternatives for small businesses that it has considered in reaching its approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities.

86. The Commission believes that the incentive auction mechanism adopted in the Fourth R&O will result in both operational and administrative cost savings for small entities, as

well as other participants. At the outset, because participating in the auction is voluntary, the Commission allows incumbent licensees, including small entities, to have their existing licenses modified instead of having to participate in an auction if they so choose. The incentive auction will give incumbent licensees, including small entities, an opportunity to receive incentive payments for their spectrum licenses that are based on a market price, while providing opportunities to obtain additional licenses. Moreover, should new licenses match the spectrum usage rights of an incumbent's current licenses, the incentive payments will be enough so that the incumbents can win new licenses without making additional payments, regardless of how high bids for those new licenses may go in the auction. Furthermore, adopting a two-phase auction procedure will benefit all participants by resulting in a quick auction, due to the first clock phase, followed by an assignment phase. This benefits small entities, as they may not have the same flexibility as larger entities to devote time to participating in the auction. In addition, winning bidders do not have to bid in the assignment phase. Furthermore, the Commission anticipates being able to assign contiguous frequencies within a PEA category, even where a clock phase winning bidder does not bid in the assignment phase. This benefits smaller entities that otherwise might have difficulty aggregating contiguous licenses through transactions in the secondary market. In addition, the Commission has adopted bidding credits for applicants for new licenses who qualify as small businesses. An entity with average annual gross revenues for the preceding three years not exceeding \$55 million will qualify as a "small business" and be eligible to receive a 15 percent discount on its winning bid. An entity with average annual gross revenues for the preceding three years not exceeding \$20 million will

qualify as a “very small business” and be eligible to receive a 25 percent discount on its winning bid.

87. The Commission also believes that its actions modifying the band plan from 200 megahertz to 100 megahertz channels in the 39 GHz, Upper 37 GHz, and 47 GHz bands will help small entities by making spectrum available in smaller license sizes that may be more attractive to small entities. Similarly, the Commission believes the proposed mechanism for auctioning the 39 GHz and Upper 37 GHz bands will facilitate access to spectrum by small businesses. Accordingly, the Commission does not believe that its adopted changes will have a significant economic impact on small entities. Nevertheless, to the extent applying the rules equally to all entities results in the cost of complying with these burdens being relatively greater for smaller businesses than for large ones, this approach is necessary to effectuate the purpose of the Communications Act, namely to further the efficient use of spectrum and to prevent spectrum warehousing.

V. Ordering Clauses

88. Accordingly, IT IS ORDERED that, pursuant to Sections 4(i), 201(b), 303, 308, 309, 316, 324, 332, and 337 of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 201(b), 303, 308, 309, 316, 324, 332, 337, this Fourth Report and Order IS HEREBY ADOPTED.

89. IT IS FURTHER ORDERED that the amendments of the Commission’s rules as set forth below ARE ADOPTED, effective thirty days from the date of publication in the Federal Register.

90. IT IS FURTHER ORDERED that the Commission’s Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Fourth Report and

Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

91. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this Fourth Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. 801(a)(1)(A).

List of Subjects in 47 CFR Parts 1 and 30

Administrative practice and procedures, Communications common carriers
FEDERAL COMMUNICATIONS COMMISSION.

Cecilia Sigmund,
Federal Register Liaison Officer,
Office of the Secretary.

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 1 and 30 as follows:

PART 1 –PRACTICE AND PROCEDURE

1. The authority citation for part 1 continues to read as follows:

Authority: 47 U.S.C. 151, 154(i) and (j), 155, 157, 160, 201, 224, 225, 227, 303, 309, 310, 332, 1403, 1404, 1451, 1452, and 1455.

2. Revise § 1.2101 to read as follows:

§ 1.2101 Purpose.

The provisions of §§ 1.2101 through 1.2115 implement section 309(j) of the Communications Act of 1934, as added by the Omnibus Budget Reconciliation Act of 1993 (Pub. L. 103-66) and subsequent amendments.

3. Add § 1.2115 to read as follows:

§ 1.2115 Public notice of incentive auction related procedures.

The provisions of this subpart may be used to conduct an incentive auction pursuant to 47 U.S.C. 309(j)(8)(G), including either or both a reverse auction to determine the incentive payment a licensee would be willing to accept in exchange for relinquishing spectrum usage rights and a forward auction to assign flexible use licenses for any spectrum made available as the result of such relinquishments. The Commission shall provide public notice of any procedures necessary for the implementation of an incentive auction that are not otherwise

provided for pursuant to the rules of this Subpart. The Commission may do so in one or more such public notices. The Commission's procedures may include, without limitation:

(a) Spectrum usage rights relinquishment procedures. The procedures pursuant to which a licensee may make an unconditional, irrevocable offer to relinquish spectrum usage rights in exchange for an incentive payment, including any terms the offer must include and procedures pursuant to which the Commission may accept such an offer.

(b) Information required from a licensee. (1) The procedures for a licensee to provide any identifying information and or certifications that the Commission may require from any licensee that seeks to relinquish spectrum usage rights in the incentive auction.

(2) The procedures for a licensee that is relinquishing spectrum usage rights to provide any financial information that the Commission may require to facilitate the disbursement of any incentive payment.

PART 30 – UPPER MICROWAVE FLEXIBLE USE SERVICE

4. The authority citation for part 30 continues to read as follows:

Authority: 47 U.S.C. 151, 152, 153, 154, 301, 303, 304, 307, 309, 310, 316, 332, 1302.

5. Amend § 30.4 by redesignating paragraphs (b), (c), (d), and (e) as paragraphs (c), (d), (f), and (g) respectively, adding and reserving new paragraphs (b) and (e), and revising redesignated paragraphs (d)(1), (f), and (g) to read as follows:

§ 30.4 Frequencies.

* * * * *

(b) [Reserved]

* * * * *

(d) * * *

(1) New channel plan:

Channel No.	Frequency band limits (MHz)
1	38,600-38,700
2	38,700-38,800
3	38,800-38,900
4	38,900-39,000
5	39,000-39,100
6	39,100-39,200
7	39,200-39,300
8	39,300-39,400
9	39,400-39,500
10	39,500-39,600

11	39,600-39,700
12	39,700-39,800
13	39,800-39,900
14	39,900-40,000

* * * * *

(e) [Reserved]

(f) 37-38.6 GHz band: 37,600-37,700; 37,700-37,800 MHz; 37,800-37,900 MHz; 37,900-38,000 MHz; 38,000-38,100 MHz; 38,100-38,200 MHz; 38,200-38,300 MHz; 38,300-38,400 MHz; 38,400-38,500 MHz, and 38,500-38,600 MHz. The 37,000-37,600 MHz band segment shall be available on a site-specific, coordinated shared basis with eligible Federal entities.

(g) 47.2-48.2 GHz band—47.2-47.3 GHz; 47.3-47.4 GHz; 47.4-47.5 GHz; 47.5-47.6 GHz; 47.6-47.7 GHz; 47.7-47.8 GHz; 47.8-47.9 GHz; 47.9-48.0 GHz; 48.0-48.1 GHz; and 48.1-48.2 GHz.

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